AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method for configuring an aircraft for low sonic boom supersonic flight conditions comprising:

scaling by a computer an equivalent area distribution curve of the aircraft to approximate an ideal equivalent area distribution goal curve; and

relaxing by a computer a design constraint that requires the equivalent area distribution curve of the aircraft to be less than or equal to (≤) the equivalent area distribution goal curve instead of equal (=) to the equivalent area distribution curve; and

determining by a computer an optimum configuration according to at least one of: lift-to-drag ratio and low sonic boom.

2. (Currently amended) The method according to Claim 1 further comprising:

segmenting by a computer a wing of the aircraft into panels;

analyzing by a computer the flow characteristics for each panel; and

smoothing by a computer the configuration of each panel with adjacent panels along the span and the chord of the wing to smooth the wing surface.

3. (Currently amended) The method according to Claim 1 further comprising:

determining by a computer design variables at the root and the tip of a wing of the aircraft along Mach angle lines (X - Beta*R).

4. (Currently amended) The method according to Claim 1 further comprising:

determining by a computer an incidence angle for a wing root of the aircraft for maximum lift-to-drag and connection to a fuselage; and

determining by a computer the shape of the remaining portions of the wing for maximum lift-to-drag.

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5. (Currently amended) The method according to Claim 4 further comprising:
re-determining by a computer the incidence angle for the root of a wing of the aircraft and the remaining portion of the wing to meet less than or equal to equivalent area low sonic boom constraints and maximum lift-to-drag.

6. (Currently amended) The method according to Claim 1 further comprising:
dividing by a computer a flight regime of the aircraft into multiple flight modes;
determining by a computer an optimum configuration of non-moving components for one of the flight modes; and
determining by a computer an optimum configuration of moving components for the other flight modes based on the configuration of non-moving components.

7. (Canceled)

8. (Currently amended) The method according to Claim 3 further comprising:
limiting by a computer the length of the excursion of the equivalent area distribution curve below the equivalent area distribution goal curve by dividing the excursion into at least two smaller excursions.

9. (Currently amended) The method according to Claim 1 further comprising:
determining by a computer a minimized sonic boom disturbance of an F-function; and
scaling by a computer the equivalent area distribution goal curve to maintain the desired aircraft weight while countering excursions below the equivalent area distribution goal curve.

10. (Currently amended) The method according to Claim 3 further comprising:
analyzing by a computer the sonic boom disturbance below and to the side of the aircraft; and
perturbing by a computer aircraft design variables to meet sonic boom constraints below and to the side of the aircraft.

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11. (Currently amended) The method according to Claim 1 further comprising:
adjusting by a computer the configuration of a wing on the aircraft to redistribute areas of lift on the wing; and
reshaping by a computer a fuselage of the aircraft in combination with the wing to match the equivalent area distribution goal curve.

12. (Currently amended) The method according to Claim 11 further comprising:
redistributing by a computer the areas of lift subject to center-of-pressure constraints to achieve desired balance characteristics for the aircraft.

13-28. (Canceled)

29. (Currently amended) A method for configuring an aircraft for supersonic flight with low shock wave disturbance constraints comprising:
redistributing by a computer lift of a wing by configuring the wing with areas of far-field expansion ahead of areas of far-field compression; and
scaling by a computer an equivalent area distribution goal curve to maintain the desired aircraft weight while countering excursions below the equivalent area distribution goal curve.

30. (Currently amended) The method according to Claim 29 further comprising:
segmenting by a computer the wing into panels;
analyzing by a computer the flow characteristics for each panel; and
interpolating by a computer the configuration of each panel with adjacent panels to smooth oscillations in the wing surface chordwise, and spanwise along Mach angle lines.

31. (Currently amended) The method according to Claim 29 further comprising:
analyzing by a computer perturbations of design variables at the root and the tip of the wing along Mach angle lines.

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32. (Currently amended) The method according to Claim 29 further comprising:
analyzing by a computer perturbations of design variables along a mid-section portion of the wing.

33. (Currently amended) The method according to Claim 29 further comprising:
determining by a computer an incidence angle for the wing for maximum lift-to-drag; and
determining by a computer the shape of the remaining portions of the wing for maximum lift-to-drag; and
re-determining by a computer the incidence angle and shape of the wing to also meet low sonic boom constraints.

34. (Currently amended) The method according to Claim 29 further comprising:
redistributing by a computer the lift of the wing with center-of-pressure constraints for aircraft balance.

35. (Currently amended) The method according to Claim 29 further comprising:
dividing by a computer a flight regime of the aircraft into multiple flight modes;
determining by a computer an optimum configuration according to sonic boom constraints at a flight condition; and
determining by a computer another optimum configuration to minimize drag at another flight condition subject to sonic boom constraints.

36. (Currently amended) The method according to Claim 29 further comprising:
dividing by a computer the areas of far-field expansion and far-field compression into at least two areas of expansion and compression to reduce the magnitude of the sonic boom disturbance.

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37. (Currently amended) The method according to Claim 29 further comprising:

determining by a computer a desired magnitude of sonic boom disturbance on an F-function; and

scaling by a computer the equivalent area distribution goal curve to maintain the desired aircraft weight while countering excursions below the equivalent area distribution goal to achieve the desired magnitude of sonic boom disturbance.

38. (Currently amended) The method according to Claim 29 further comprising:

analyzing by a computer the sonic boom disturbance below and to the side of the aircraft; and

configuring by a computer the aircraft to meet sonic boom constraints below and to the side of the aircraft.

39. (Currently amended) The method according to Claim 29 further comprising:

allowing the user to define a design variable by a computer with limits that allow variation in the incidence angle of the wing where the wing joins the aircraft within a range that allows the wing to be connected to the aircraft.

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